

REMARKS

Claims 1-4 and 10-30 are pending.

Amendment summary

The first full paragraph on page 50 of the specification has been amended to reference cords (22) in Figure 7. Applicant notes that the Figure 7 denotes the reference character as “Cord 22.” Therefore, the amendment of the first full paragraph on page 50 of the specification to refer to “cords (22)” does not constitute new matter.

Applicant respectfully submits that entry of this Amendment is proper.

Status of the claims

Claims 1-4, 10, 22-23, and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa et al (US 4,872,932) (hereinafter “Yoshikawa”) in view of Bellamy (US 3,897,583). Claims 1-4, 10, 12, 22-23, and 29-30 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa in view of JP 10-053010 (hereinafter “JP ‘010”). Finally, Claim 11 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa in view of Marshall et al (US 4,397,985) and Shindo et al (US 5,049,447) (hereinafter “Marshall” and “Shindo,” respectively).

Response to objection to the drawings

The Office Action objected to the drawings for including reference character 22 in Figure 7, which was allegedly not mentioned in the description. In response, Applicants have amended

the first full paragraph on page 50 of the specification, which describes Figure 7, to include the proper reference to reference character 22.

Applicant respectfully requests withdrawal of this rejection.

Response to rejection of Claims 1-4, 10, 22-23, and 29 based on Yoshikawa in view of Bellamy

On Page 2 of the Office Action, Claims 1-4, 10, 22-23, and 29 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa in view of Bellamy, using the same rationale for this rejection that was put forth in the Office Action mailed March 24, 2006.

As discussed in the Amendment filed July 20, 2006, Bellamy discloses coating a vulcanized rubber onto metal reinforcement such as wire tire fabric or tire bead wire (col. 3, lines 19-23). Bellamy further exemplifies the use of a wire tire cord of 5 x 7 x 0.0058 inch over twisted 3 x 1 x 1 construction commonly employed in making the plies of a pneumatic tire.

On the other hand, the present claims require that the fiber is substantially non-bundled and is a fiber aggregate comprising a single filament or ten pieces or less of filaments (Claim 1); or is a fiber aggregate consisting of glass wool, nonwoven fabric, knitted fabric and net fabric (Claim 29).

The Examiner observed that Bellamy discloses that wire tire fabric can be used and stated that Bellamy therefore teaches the use of fiber aggregates as claimed.

However, Applicants again respectfully submit that the twisted wire cords, such as the 5 x 7 x 0.0058 inch over twisted 3 x 1 x 1 construction in Example 1 of Bellamy do not correspond

to Applicants' claimed non-bundled organic or inorganic fibers. Further, the illustrated wire cords are not the same as the wire tire fabric that the Office Action cites, and Bellamy does not illustrate the use of the wire tire fabric - only the use of the wire tire cord. Thus, Bellamy does not illustrate the use of Applicants' claimed non-bundled organic or inorganic fibers, and its teachings do not cure the deficiencies in Yoshikawa in this respect.

Applicants submit that the twisted wire cord described in Bellamy does not meet the requirements of the present claims. Therefore, even if, *arguendo*, there might be motivation to combine Bellamy with Yoshikawa, the combination still would not result in the present invention.

Therefore, Applicant respectfully requests reconsideration and withdrawal of this § 103 rejection.

Response to rejection of Claims 1-4, 10, 12, 22-23, and 29-30 based on Yoshikawa in view of JP '010

On Page 4 of the Office Action, Claims 1-4, 10, 12, 22-23, and 29-30 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa in view of JP '010.

Applicant respectfully submits that there is insufficient motivation to maintain this rejection. JP '010 describes improved rigidity of a tire sidewall part and steering stability of a tire by integrating a filament fiber with rubber through a predetermined area between a carcass layer and a sidewall (Paragraph Nos. ([0007] and [0008]), in particular, the rubber-filament fiber composite body is arranged from the upper end of a bead filler through more than at least 35% of

the maximal width end of the belt part between at least one sheet, and the carcass layer and the sidewall (Paragraph No. [0009]). However, there is no indication or suggestion in JP '010 that the use of the rubber-filament fiber reinforcement member, let alone the filament fiber, is attributable to the improved properties. Moreover, in the examples of JP '010, inventive Examples 1 and 2 and Comparative Example 3 contain the same reinforcement member. Examples 1 and 2, with reinforcement member coating percentage of 60% and 85%, respectively, show improved steering stability in comparison to Comparative Example 3 with reinforcement member coating percentage of 30% (Table 1). Applicants respectfully submit that there is no motivation to substitute the filament fiber of JP '010 for the substrate of Yoshikawa. Further, JP '010 is silent about improved fiber-rubber adhesion in the present invention.

Further, Applicants note that paragraph [0023] of JP '010 clearly states that “when adhesion [to the rubber] is inadequate, it is sufficient to perform dipping heat-setting processing to a filament fiber like the case where the adhesive power of the fiber cord for tires and rubber is heightened.” Hence, if one of ordinary skill in the art were seeking to improve the adhesion of the rubber to the filament fiber in JP '010, they would perform a heat setting process on the filament fiber - they would not look to the teachings of Yoshikawa to discover how to improve the adhesion.

Applicant therefore respectfully requests reconsideration and withdrawal of this § 103(a) rejection.

Response to rejection of Claim 11 based on the combined teachings of Yoshikawa, Marshall, and Shindo

On Page 4 of the Office Action, Claim 11 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yoshikawa in view of Marshall and Shindo.

Applicants respectfully submit that Marshall and Yoshikawa do not constitute analogous art for the purposes of § 103. Specifically, Applicants note that Marshall relates to fiber finish compositions and processes for treating polyester yarn after a drawing (spinning) process of fibers. Fiber finish compositions are used for oiling, which prevents cut of fibers in various processes. On the other hand, Yoshikawa relates to a method for making a rubbery composite material. Accordingly, Applicants respectfully submit that Marshall and Yoshikawa should not be combined because they do not constitute analogous art for the purposes of § 103.

Further, Applicants again note the Declaration under 37 C.F.R. § 1.132 of Mr. Masaaki Nakamura, a co-inventor of the present invention. The Declaration demonstrates the differences in adhesion properties between the present invention and dry plated multi-filament cords or short fibers made of the dry plated multi-filament cords, and further supports the patentability of the present invention.

Specifically, in the Declaration, the multi-filament cords of Comparative Examples A to E were made by twisting 20 mono-filaments at 2 turns/10 cm by a twisting machine. Comparative Example A was prepared according to the same procedure for plasma cleaning and dry plating treatments as Example 2 described in the present specification. Comparative Examples B to E were prepared according to the same procedure for plasma cleaning and dry plating treatments as Examples 9, 10, 11, 25, 26 and 27 of the present specification.

Adhesion at 200% elongation of the short fibers made from the treated multi-filament cords of Comparative Examples A to E and the short fibers of Examples 2, 9, 10, 11, 25, 26 and 27 of the present specification were evaluated in the same manner described in the present specification. In addition, adhesion at 200% elongation of the twisted treated multi-filament cords of Comparative Examples A to E were evaluated. Further, pneumatic tires were prepared and tested in the same manner as described in the present specification by using the short fibers of Example 2 and Comparative Example 1, respectively (bead filler rubber adhesion). The results are summarized in the following Table 1.

Table 1-1

	Example 2	Comparative Example A	Example 9	Comparative Example B	Example 10	Comparative Example C
Fiber Material raw material kind single fiber diameter (μ m)	Polyester F-3 103	Polyester F-3 twisted multi-filaments cord	Polyarylate F-5 45	Polyarylate F-5 twisted multi-filaments cord	Nylon F-6 125	Nylon F-6 twisted multi-filaments cord
Rubber Composition	G-2	G-2	G-2	G-2	G-2	G-2
Evaluation Results (1) Adhesion at 200% elongation for short fibers	A	C	A	C	A	C
(2) Adhesion at 200% elongation for twisted cords		C		C		C
(3) Bead filler rubber short fiber adhesion	A					
(4) Bead filler rubber twisted cord adhesion		C				

Table 1-2

	Example 11	Comparative Example D	Example 25	Example 26	Example 27	Comparative Example E
Fiber Material	Aramid	Aramid	glass	glass	glass	glass
raw material kind	F-7	F-7	1-4	1-5	1-6	1-4
single fiber diameter (μ m)	100	twisted multi-filaments cord	9	9	10-24	twisted multi-filaments cord
Rubber Composition	G-2	G-2	G-2	G-2	G-2	G-2
Evaluation Results						
(1) Adhesion at 200% elongation for short fibers	A	C	A	A	A	C
(2) Adhesion at 200% elongation for twisted cords		C				C

As the results in the above tables show, the adhesion properties of the short fibers of Examples 2, 9, 10, 11, 25, 26 and 27 according to the present invention (no or substantially no peeling) are unexpectedly superior to those of the multi-filament cords of Comparative Examples A to E and the short fibers made thereof (peeling or break due to peeling).

In view of the above, Applicants respectfully request reconsideration and withdrawal of this § 103 rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

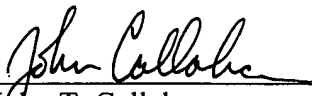
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